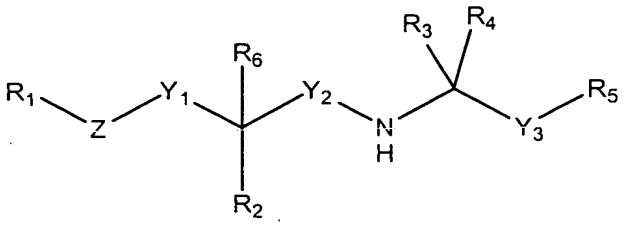
## CLAIMS

1. A compound having the chemical formula:




wherein $R_1$ is selected from the group consisting of: heteroaryl and heterocycloalk;

$R_2$ is selected from the group consisting of: lower alk, cycloalk, alkoxy, H, OH, =O. C(O)OH, C(O)O-lower alk, C(O)NH-lower alk, C(O)N(lower alk)$_2$, SH, S-lower alk, $NH_2$, NH-lower alk, and N(lower alk)$_2$,

$R_3$ and $R_4$ is each independently lower alk or together cyclopropyl;

$R_5$ is either an optionally substituted naphthyl having one to four substituents independently selected from the group consisting of methyl, ethyl, isopropyl, methoxy, Cl, F, Br, and lower haloalkoxy, or a substituted phenyl having one to four substituents with at least one substituent in a *meta* or *para* position selected from the group consisting of: lower alkyl, methoxy, Cl, F, Br, and lower haloalkoxy, provided that said substituted phenyl may also have 2 to 3 additional substituents;

$R_6$ if present is either hydrogen, lower alkyl or lower alkenyl, wherein $R_6$ is not present if $R_2$ is =O;

$Y_1$ is either covalent bond, alkylene, or alkenylene;

$Y_2$ is alkylene;

$Y_3$ is alkylene;

Z is selected from the group consisting of: covalent bond, O, S, NH, N-lower alk, alkylene, alkenylene, and alkynylene, provided that if Z is either O, S, NH, or N-lower alk, then $Y_1$ is not a covalent bond; further provided that $Y_1$ and Z may together be a covalent bond;

further provided that if $R_5$ is 3, 4 dimethoxy-phenyl, then $R_1$ is not $CH_3(CH_2)_5O$-phenyl; 2-cyclopentyl, phenyl; 2-Cl-phenyl; 2-CN-phenyl; 2-(3-furanyl)phenyl; or 4-benzo(d)isothiazole;

further provided that if $R_5$ is 4-methoxy-phenyl, then $R_1$ is not 2-cyclopentyl-phenyl; 2-$CH_3$-phenyl; 2-benzyl-phenyl; 3-$CH_3$-phenyl, 4-$CH_3SO_2$-phenyl, 4-benzo(d)isothiazole;

further provided that if $R_5$ is 4-Cl-phenyl, then $R_1$ is not 2-$CH_3$-phenyl, 5-iso-propyl-phenyl; 4-$CH_3$-phenyl; phenyl; 2-Cl-phenyl; 4-Cl-phenyl; 2-methoxy, 4-$CH_3CHCH$-phenyl; 3,4 $CH_3$-phenyl, 2,4 $CH_3$-phenyl; 2,3 $CH_3$-phenyl; 2-iso-propyl, 5-$CH_3$-phenyl; pyridyl; 1-imidazole; or 4-benzo(d)isothiazole; and

further provided that if $R_5$ is 3,5 dimethyl, 4-methoxy-phenyl, then $R_1$ is not 4-$CH_3$, 6-CN-2-pyridyl; or thiophenecarboxamide; and

pharmaceutically acceptable salts and complexes thereof;

wherein said compound has an $IC_{50} \leq 10$ μM using the Calcium Receptor Inhibitor Assay.

2. The compound of claim 1, wherein

$Y_1$ is methylene;

$Y_2$ is methylene; and

$Y_3$ is methylene.

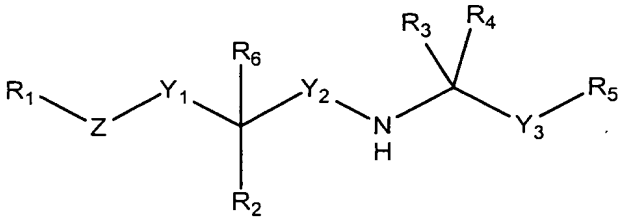
3. The compound of any of claims 1-2, wherein
$R_2$ is OH or methoxy,
$R_6$ is hydrogen,
$R_3$ or $R_4$ is independently methyl or ethyl; and
Z is O, S, or unsubstituted alkylene.

4. The compound of claim 3, wherein $R_2$ is OH, and Z is O.

5. The compound of claims 1-2, wherein
$R_2$ is hydrogen,
$R_6$ is hydrogen,
$R_3$ and $R_4$ is independently methyl or ethyl; and
Z is O or methylene.

6. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of the compound of claims 1-3.

7. A method of treating a patient comprising the step of administering to said patient a therapeutically effective amount of a compound having the formula:




wherein $R_1$ is selected from the group consisting of: heteroaryl and heterocycloalk;

$R_2$ is selected from the group consisting of: lower alk, cycloalk, alkoxy, H, OH, =O, C(O)OH, C(O)O-lower alk, C(O)NH-lower alk, $C(O)N(\text{lower alk})_2$, SH, S-lower alk, $NH_2$, NH-lower alk, and $N(\text{lower alk})_2$;

$R_3$ and $R_4$ is each independently lower alk or together cyclopropyl;

$R_5$ is aryl;

$R_6$ if present is either hydrogen, lower alkyl or lower alkenyl, wherein $R_6$ is not present if $R_2$ is =O;

$Y_1$ is either covalent bond, alkylene, or alkenylene;

$Y_2$ is alkylene;

$Y_3$ is alkylene;

Z is selected from the group consisting of: covalent bond, O, S, NH, N-lower alk, alkylene, alkenylene, and alkynylene, provided that if Z is either O, Z, NH, or N-lower alk, then $Y_1$ is not a covalent bond; further provided that $Y_1$ and Z may together be a covalent bond; and

pharmaceutically acceptable salts and complexes thereof;

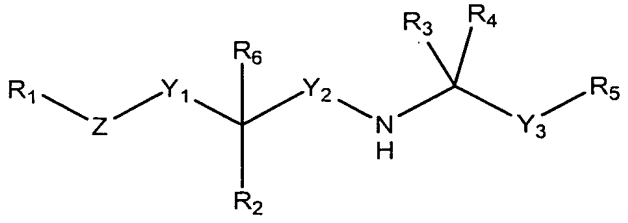
wherein said patient has a disease or disorder characterized by one or more of the following: (1) an abnormal bone or mineral homeostasis; (2) an abnormal amount of an extracellular or intracellular messenger which is ameliorated by a compound able to effect one or more calcium receptor activities; or (3) an abnormal effect of an intracellular or extracellular messenger which is ameliorated by a compound able to affect one or more calcium receptor activities.

8. The method of claim 7, wherein said disease or disorder is characterized by said abnormal bone or mineral homeostasis.

9. The method of claim 7, wherein said disease or disorder is selected from the group consisting of: osteosarcoma, periodontal disease, fracture healing, osteoarthritis, rheumatoid arthritis, Paget's disease, humoral hypercalcemia malignancy, and osteoporosis.

10. The method of claim 9, wherein disease or disorder is osteoporosis.

11. A method of treating a patient comprising the step of administering to said patient an amount of a compound sufficient to increase serum PTH level, said compound having the formula:




wherein $R_1$ is selected from the group consisting of: heteroaryl and heterocycloalk;

$R_2$ is selected from the group consisting of: lower alk, cycloalk, alkoxy, H, OH, =O, C(O)OH, C(O)O-lower alk, C(O)NH-lower alk, C(O)N(lower alk)$_2$, SH, S-lower alk, $NH_2$, NH-lower alk, and N(lower alk)$_2$;

$R_3$ and $R_4$ is each independently lower alk or together cyclopropyl;

$R_5$ is aryl;

$R_6$ if present is either hydrogen, lower alkyl or lower alkenyl, wherein $R_6$ is not present if $R_2$ is =O;

$Y_1$ is either covalent bond, alkylene, or alkenylene;

$Y_2$ is alkylene;

$Y_3$ is alkylene

Z is selected from the group consisting of: covalent bond, O, S, NH, N-lower alk, alkylene, alkenylene, and alkynylene, provided that if Z is either O, S, NH, or N-lower alk, then $Y_1$ is not a covalent bond; further provided that $Y_1$ and Z may together be a covalent bond; and

pharmaceutically acceptable salts and complexes thereof.

12. The method of claim 11, wherein said compound is administered to said patient causes an increase in serum PTH having a duration of one to twelve hours.

13. The method of claim 11, wherein said method is carried out by administering an amount of said compound effective causes an increase in either duration, quantity, or both duration and quantity, of serum PTH level sufficient to have a therapeutic effect.

14. The method of claim 13, wherein said compound is administered to said patient causes an increase in serum PTH having a duration of one to twelve hours.

15. The method of claim 14, wherein said duration is about two to about four hours.

16. The method of claim 13, wherein said compound is administered to said patient causes an increase in serum PTH up to 0.5 fold greater than peak serum PTH in said patient.

17. The method of claim 13, wherein said compound is administered to said patient causes an increase in serum PTH 0.5 fold to 5 fold greater than peak serum PTH in said patient.

18. The method of claim 13, wherein said compound is administered to said patient causes an increase in serum PTH 5 fold to 10 fold greater than peak serum PTH in said patient.

19. The method of claim 13, wherein said compound is administered to said patient causes an increase in serum PTH at least 10 fold greater than peak serum PTH in said patient.

20. The method of any of claims 7-19, wherein $R_5$ is a substituted phenyl having one to four substituents each independently selected from the group consisting of: methoxy, lower alkyl, $OCF_3$, $CFH_2$, $CHF_2$, $CF_3$, $OHC_2CF_3$, F, Cl, Br, I, OH, SH, CN, $NO_2$, $NH_2$, methylene dioxy, NH-lower alkyl, N(lower alkyl)$_2$, C(O)lower alkyl, SC(O)lower alkyl, $S(O)_2$ lower alkyl, OC(O)lower alkyl, SC(O)lower alkyl, OC(S)lower alkyl, NHC(O)lower alkyl, N(lower alkyl)C(O)lower alkyl, NHC(S) lower alkyl, N(lower alkyl)C(S)lower alkyl, NHS(O)lower alkyl, N(lower alkyl)S(O)lower alkyl, C(O)OH, C(O)O-lower alkyl, $C(O)NH_2$, C(O)NH-lower alkyl, C(O)N(lower alkyl)$_2$, $S(O)_2NH_2$, $S(O)_2$NH-lower alkyl, and $S(O)_2$N(lower alkyl)$_2$.

21. The method of claim 20, wherein each $R_5$ substituent is independently selected from the group consisting of: alkoxy, lower-haloalkyl, S-unsubstituted alkyl, lower-haloalkoxy, unsubstituted alkyl, unsubstituted alkenyl, halogen, SH, CN, $NO_2$, $NH_2$ and OH.

22. The method of claim 21, wherein $R_5$ is a substituted phenyl with at least one substituent in a *meta* or *para* position selected from the group consisting of: lower alkyl, methoxy, Cl, F, Br, and lower haloalkoxy, provided that said $R_5$ substituted phenyl may also have 2 to 3 additional substituents.

23. The method of claim 9 or 13, wherein $R_5$ is an optionally substituted naphthyl.

24. The method of claim 23, wherein $R_5$ is a substituted naphthyl having one to four substituents each independently selected from the group consisting of: alkoxy, lower-haloalkyl, S-unsubstituted alkyl, lower-haloalkoxy, unsubstituted alkyl, unsubstituted alkenyl, halogen, SH, CN, $NO_2$, $NH_2$ and OH.

25. The method of claim 24, wherein $R_5$ is naphthyl.

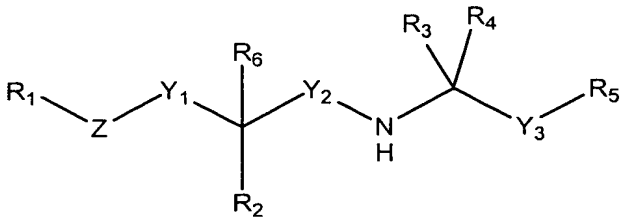
26. The method of claim 22, wherein
$R_2$ is OH or alkoxy,
$R_6$ is hydrogen,
$R_3$ and $R_4$ is each independently a lower alkyl; and
Z is either O, S, or unsubstituted alkylene.

27. The method of claim 26, wherein
$R_2$ is OH or methoxy;
$Y_1$ is methylene;
$Y_2$ is methylene; and
$Y_3$ is methylene.

28. The method of claim 27, wherein $R_3$ is methyl or ethyl; and $R_4$ is methyl or ethyl.

29. The method of claim 28, wherein Z is O or methylene and $R_2$ is OH.

30. A method of screening for a calcilytic compound comprising the step of measuring the ability of a compound to inhibit one or more calcium receptor activities, said compound having the formula:




wherein $R_1$ is selected from the group consisting of: heteroaryl and heterocycloalk;

$R_2$ is selected from the group consisting of: lower alk, cycloalk, alkoxy, H, OH, =O, C(O)O-lower alk, C(O)NH-lower alk, C(O)N(lower alk)$_2$, SH, S-lower alk, $NH_2$, NH-lower alk, and N(lower alk)$_2$;

$R_3$ and $R_4$ is each independently lower alk or together cyclopropyl;

$R_5$ is aryl;

$R_6$ if present is either hydrogen, lower alkyl or lower alkenyl, wherein $R_6$ is not present if $R_2$ is =O;

$Y_1$ is either covalent bond, alkylene, or alkenylene;

$Y_2$ is alkylene;

$Y_3$ is alkylene;

Z is selected from the group consisting of: covalent bond, O, S, NH, N-lower alk, alkylene, alkenylene, and alkynylene, provided that if Z is either O, S, NH, or N-lower alk, then $Y_1$ is not a covalent bond; further provided that $Y_1$ and Z may together be a covalent bond; and

pharmaceutically acceptable salts and complexes thereof.

31. The method of claim 30, wherein said method is carried out under conditions wherein influx of extracellular $Ca^{2+}$ is inhibited.